

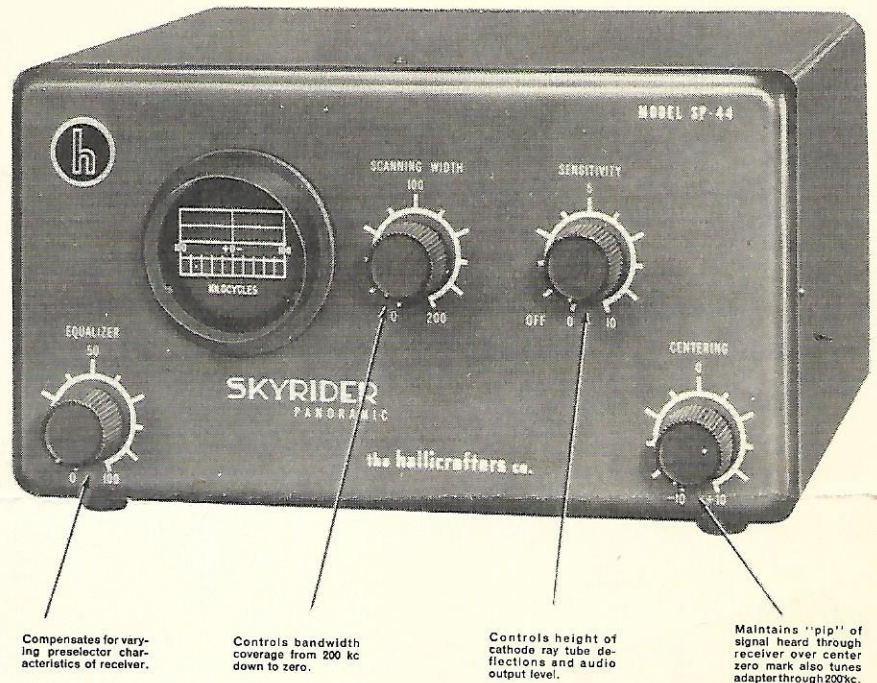
## SERVICE BULLETIN FOR SKYRIDER PANORAMIC MODEL SP-44

**GENERAL:** The model SP-44 Skyrider Panoramic is a device designed for operation in conjunction with a companion receiver for the purpose of monitoring up to 200 kc of the radio spectrum visually. This adaptor may be used with any receiver having an I-F frequency between 450 and 470 kc.

**REAR PANEL CONNECTIONS:** Consists of a line cord with plug, phone jack for monitoring purposes, and R-F coupling cable to companion receiver.

**POWER SUPPLY DATA:** 105-125 volts AC, 50-60 cycles, power drain is approximately 55 watts.

**TUBE TYPES AND FUNCTIONS:** 6SG7 R-F amplifier, 6SA7 converter, 6SG7 I-F amplifier, 6SQ7 detector-video amplifier, 6AC7 reactor, VR-105 voltage regulator, 6SN7 saw tooth generator and amplifier, 2AP1 cathode ray tube, 6X5 low voltage rectifier, 6X5 high voltage rectifier.



Compensates for varying preselector characteristics of receiver.

Controls bandwidth coverage from 200 kc down to zero.

Controls height of cathode ray tube deflections and audio output level.

Maintains "pip" of signal heard through receiver over center zero mark also tunes adapter through 200kc.

Fig. 1. Skyrider Panoramic Model SP-44, view showing operating controls.

**a. ALIGNMENT PROCEDURE.** — Allow the PANADAPTOR to reach operating temperature to assure stable operation. This may require 10-20 minutes. Adjust the screwdriver controls, INTENSITY and FOCUS, for optimum brightness and sharpness of the baseline trace. Note: Reduction of the intensity and proper adjustment of the Focus control produces a sharp baseline. Bring the baseline trace in coincidence with the lowest horizontal line on the screen by means of the VERTICAL POSITION Control.

Adjust the HORIZONTAL POSITION Control

so that the baseline is approximately centered along the horizontal axis.

Determine whether the horizontal sweep is synchronized to half the line of frequency by introducing hum into the grid (pin #2) of the 6SQ7 (use finger or screwdriver). A double hump should appear on the baseline if the circuit is operating correctly. If it does not, refer to the Troubleshooting Chart.

The Panoramic screen is used as the alignment indicator. Signals should be kept below the saturation level by limiting the signal generator output voltage.

*continued*

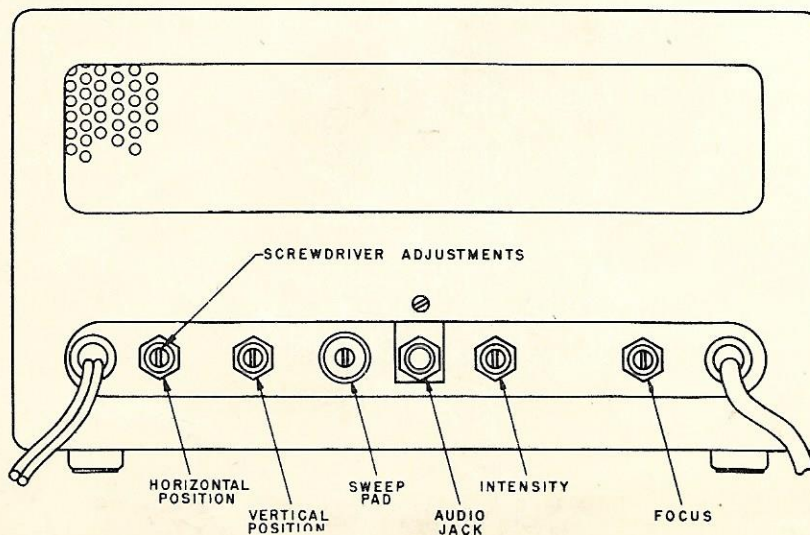


Fig. 2. View showing operating control functions

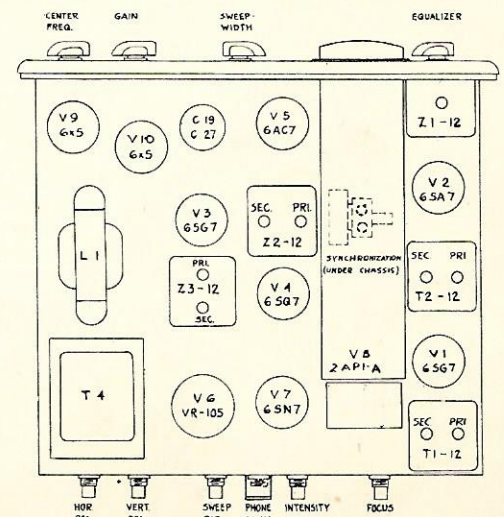


Fig. 3. Top View of Chassis.



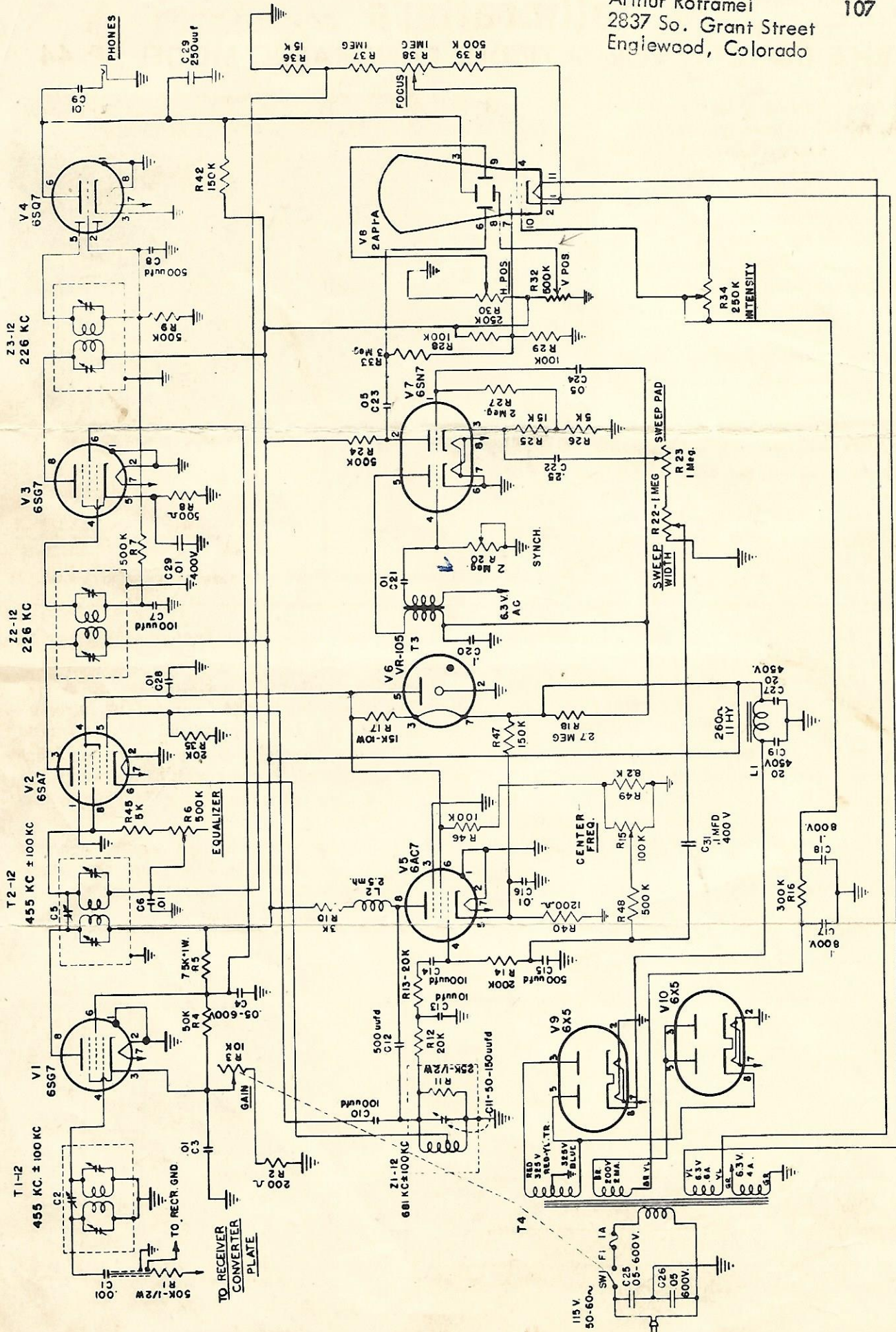


Fig. 4. Circuit Diagram, For Skyriider Panoramic Model SP-44

- NOTES
1. ALL CONDENSER VALUES ARE IN  $\mu\text{fd}$  EXCEPT AS NOTED.
  2. RESISTOR VALUES DESIGNATED "K" ARE IN THOUSANDS (OHMS).
  3. C19 AND C27 CAN BE 2 $\mu\text{f}$  15 MFD. 450 V.



Alignment of	Signal Generator Output	Position of Controls	Procedure
I.F. Amplifier	226KC unmodulated to pin #8 of V2.	SWEEPWIDTH at zero position. CENTER FREQ. turned extreme counter-clockwise.	Entire baseline deflects upward. Adjust the trimmers in the I.F. transformers (Z2-12, Z3-12) for maximum deflection.
F.M. Oscillator	455KC (or I.F. of the receiver) unmodulated to pin #8 of V2.	SWEEPWIDTH at maximum. SWEEP PAD set half way. CENTER FREQ. at center or zero position.	A "pip" will appear on the screen. Adjust the trimmer in the oscillator transformer Z1-12, to bring "pip" to the center of the screen. Turn the SWEEPWIDTH control to almost zero for more accurate indications of proper trimmer adjustment. Return the SWEEPWIDTH control to maximum and adjust the HORIZONTAL POSITION control so that the "pip" is directly over the zero mark on the screen.
Linearity of Sweep	355KC - 555KC (or I.F. of the receiver $\pm 100$ KC) unmodulated to pin #8 of V2.	SWEEPWIDTH at maximum. CENTER FREQ. at center or zero position.	Set the signal generator for 555KC (or receiver I.F. +100KC) and bring the "pip" to the -100KC mark by means of the SWEEP PAD. Shift the signal generator frequency to 355KC (or receiver I.F. -100KC). The "pip" should be at the +100KC mark. If the linearity is incorrect, the deflections appear more than 10KC or $\frac{1}{2}$ division from each end with 455KC or I.F. deflection in the center of the screen. Some correction is possible by trial and error adjustment of the oscillator trimmer (Z1-12) and the CENTER FREQ. control. If after the adjustment is made the CENTER FREQ. control knob is off center for a 455KC (or receiver I.F.) deflection at the zero mark on the screen, unscrew and reset the knob to the center position.
R.F. Bandpass Amplifier	365KC - 545KC (or I.F. of receiver) $\pm 90$ KC) unmodulated to a 50K resistor in series with the full length of input cable to the PANADAPTOR.	Set GAIN to maximum. Turn EQUALIZER fully clockwise. Set CENTER FREQ. control to zero.	Set the signal generator at 545KC (or receiver I.F. +90). Back off the side side trimmers on both R.F. transformers (T1-12, T2-12) and align the top trimmers for maximum deflection. Shift signal generator to 365KC (or receiver I.F. -90) and tune the two side trimmers for maximum deflection. Repeat both adjustments. The ratio of the peak to center heights (peak to valley) should be greater than 20:1.



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**VOLTAGE CHART.**

Voltmeter 1,000 ohms per volt.  
Line voltage 115V

Circuit Symbol	Type	Function	PIN NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
V1	6SG7	R. F. Amplifier	0	0	17	0	17	115	6.3AC	380			
V2	6SA7	Converter	0	0	380	105	0	0	6.3AC	-1.3			
V3	6SG7	I. F. Amplifier	0	0	2.4	0	2.4	115	6.3AC	380			
V4	6SQ7	Det. Video Amp.	0	0	0	0	0	125	6.3AC	0			
V5	6AC7	Reactor	0	0	0	0	3.3	105	6.3AC	360			
V6	VR105	Voltage Reg.			380		105		380				
V7	6SN7	Sawtooth Gen. and Amplifier	0	60	5	-0.2	3	0	6.3AC	0			
V8	2AP1-A	CRT Indicator	-420	-420	140	-100	0	SL	160	175	155	-490	-420
V9	6 x 5	L. V. Rectifier			325AC			325AC	6.3AC	390			
V10	6 x 5	H. V. Rectifier			-700			-700	6.3AC	325AC			

Notes:—GAIN at minimum, SWEEPWIDTH at maximum, all other controls at normal position. SL indicates slight movement.

**VOLTAGE CHART.**

Voltmeter 25,000 ohms per volt.  
Line voltage 115V.

Circuit Symbol	Type	Function	PIN NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
V1	6SG7	R. F. Amplifier	0	0	20	0	20	120	6.3AC	380			
V2	6SA7	Converter	0	0	380	105	0	0	6.3AC	-3.0			
V3	6SG7	I. F. Amplifier	0	0	2.7	0	2.7	120	6.3AC	380			
V4	6SQ7	Det. Video Amp.	0	0	0	0	0	150	6.3AC	0			
V5	6AC7	Reactor	0	0	0	0	3.4	105	6.3AC	360			
V6	VR105	Voltage Reg.			380		105		380				
V7	6SN7	Sawtooth Gen. and Amplifier	0	150	8.2	-7.3	50	0	6.3AC	0			
V8	2AP1-A	CRT Indicator	-600	-600	165	-380	0	115*	185	250	185	-650	-600
V9	6 x 5	L. V. Rectifier			325AC			325AC	6.3AC	390			
V10	6 x 5	H. V. Rectifier			-740			-740	6.3AC	325AC			

Notes:—GAIN at minimum, SWEEPWIDTH at maximum, all other controls at normal position. \*Voltage reading varies according to scale used.

**RESISTANCE CHART.**

Circuit Symbol	Type	Function	PIN NUMBER										
			1	2	3	4	5	6	7	8	9	10	11
V1	6SG7	R. F. Amplifier	0	0	200	20	200	40K	0	50K			
V2	6SA7	Converter	0	0	50K	70K	20K	5	0	15K			
V3	6SG7	I. F. Amplifier	0	0	500	1 Meg.	500	40K	0	50K			
V4	6SQ7	Det. Video Amp.	0	500K	0		500K	250K	0	0			
V5	6AC7	Reactor	0	0	0	300K	1K	70K	0	53K			
V6	VR105	Voltage Reg.		0	50K		70K		50K				
V7	6SN7	Sawtooth Gen. and Amplifier	2 Meg.	550K	20K	1.3Meg.	3.5Meg.	0	0	0			
V8	2AP1-A	CRT Indicator	2.5Meg.	2.5Meg.	250K	1.5Meg.		3 Meg.	75K	150K	75K	2.5Meg.	2.5Meg.
V9	6 x 5	L. V. Rectifier		0	270	2.5Meg.	250		0	50K			
V10	6 x 5	H. V. Rectifier		0	3 Meg.	3 Meg.	3 Meg.		0	250			

Notes:—GAIN and SWEEPWIDTH at maximum, all other controls at normal position. K=1,000 ohms, Meg.=megohms, all other resistances are in ohms.







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### TROUBLE SHOOTING CHART.

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<u>Symptom</u>	<u>Causes and Cures</u>	<u>Symptom</u>	<u>Causes and Cures</u>
1. No illumination of the cathode ray tube, V8.	<ol style="list-style-type: none"><li>AC power is off.<ol style="list-style-type: none"><li>See if tubes are lit.</li><li>Fuse inside chassis burned out.</li><li>Check ON-OFF switch.</li></ol></li><li>INTENSITY and FOCUS controls out of adjustment.</li><li>Defective cathode ray tube, or rectifiers V9, V10.</li><li>Defective high voltage power supply.</li><li>Tubes not seated properly in sockets.</li><li>Shorted filter condensers C17, C18.</li><li>Open resistors R16, R34.</li></ol>	4. Test PANADAPTOR for center deflection with a signal generator set at 455KC (or I.F. of receiver) to the input (disconnected from receiver).	5. Increase SWEEPWIDTH control to maximum sweep.
2. Baseline trace cannot be made sharp and bright.	<ol style="list-style-type: none"><li>AC power input below 115V.</li><li>Check high voltage power supply (V10).</li><li>Defective cathode ray tube.</li><li>Check condition of INTENSITY and FOCUS controls for possible opens.</li><li>Check resistance of R16, R36, R37 and R39.</li></ol>	7. Whole baseline moves vertically when receiver is tuned.	1. F.M. sweep is not operating, and set behaves as though the SWEEPWIDTH control is set at zero. Check V5. Use an oscilloscope to check sawtooth at pin #4 of V5.
3. Baseline trace cannot be made to coincide with screen baseline.	<ol style="list-style-type: none"><li>Check high voltage power supply (V10).</li><li>Check V4 if unable to get vertical position.</li><li>Check R31.</li><li>Check the voltage on the cathode ray tube deflection plates against the voltages specified on the Voltage Chart.</li></ol>	8. Baseline remains at top of the screen regardless of tuning.	2. Strong local stations coming through the receiver and beating against one another in the input stages of the PANADAPTOR to produce 226KC. Remedy would be to align receiver or install wave traps.
4. Stationary spot on the screen.	<ol style="list-style-type: none"><li>Check V7.</li><li>Trace the sawtooth voltage with an oscilloscope from the blocking oscillator V7 to V8.</li><li>Check R16, R20.</li></ol>	9. Low gain. Able to hear weak signals but cannot see them on PANADAPTOR screen.	1. I.F. amplifier may be oscillating Change V3, V6. Check C4, C28. Compare V3 voltage against voltage chart. 2. Video amplifier V4 may be inoperative. Change V4. Compare V4 voltages against Voltage Chart.
5. Jumpy baseline or flickering images.	<ol style="list-style-type: none"><li>Sawtooth Generator is not synchronized to half the line frequency. Change V7. Check the values of the resistors and condensers R18, R19, R20, R21, C20, C21.</li><li>Feed the AC voltage from pin No. 7. of "V4" through a 500 mmf condenser to pin No. 2 of the same tube. Adjust synchronization potentiometer under the chassis until two stationary peaks appear on the screen, when the adjustment is completed, remove the AC voltage from pin No. 2.</li></ol>	10. Symptoms of misalignment.	1. Check all tubes. Most likely to be weak V3, V4. 2. Check voltages, especially screen voltage of V3. 3. Misaligned I.F. transformers. <i>Note:</i> Do not attempt alignment until <i>absolutely</i> certain that alignment is at fault.
6. No signals.	<ol style="list-style-type: none"><li>Check connection to receiver.</li><li>Turn up GAIN control.</li><li>Check operation of the receiver.</li></ol>	<ol style="list-style-type: none"><li>Low gain.</li><li>"Pips" too wide.</li><li>The double peaked response of the band pass amplifier is not peaked at points 10KC from each end of the scale.</li><li>Frequency range of signals on the screen is other than 200KC at maximum sweep-width.</li><li>Range of the CENTER FREQ. control is less than 200KC.</li><li>Pip generated by an unmodulated signal is non-symmetrical.</li></ol>	1. Do not attempt alignment until the set has been thoroughly checked for faults. Be sure that the error limits, as given in the specifications, for the PANADAPTOR, are exceeded before concluding that alignment is necessary.